



# IXP220 Controller

## Product Specification Catalogue

The **ImproX IXP220 Controller** is a fully featured Controller forming part of the IXP220 Software System. The IXP220 Controller's applications include access control and alarm control.

Consisting of a single hardware platform, the ImproX IXP220 Controller is available in a mild steel cabinet or, if preferred, in an open frame construction. The Controller is delivered as standard with all hardware components thus enabling full functionality.

Communication options include Ethernet, USB, RS485 or RS232 and memory capacity is ensured up to 10 000 Tags and 100 000 buffered Transactions.

Features include anti-tamper and a general relay for power control or alarm arming. The remaining relay and digital inputs allow each Reader support for a Door Open Sensor and Request to Enter or Exit.

Six available feature models address market needs from single door to multiple remote sites with up to 256 anti-passback doors. The IXP220 Controller is easily upgraded from a Stand-alone Controller to a System Controller through a soft unlock system.

## Key Features

### General Hardware

- 2 Reader Fixed Addresses, offering connection of up to 2 Antenna Readers OR 2 Wiegand Readers.
- IXP220-1 stores up to 1 000 Tags and up to 10 000 buffered Transactions.
- IXP220-2 stores up to 2 000 Tags and up to 10 000 buffered Transactions.
- IXP220-3 and IXP220-4 store up to 10 000 Tags and up to 100 000 buffered Transactions.
- Communication options include Ethernet, USB, RS485 or RS232.
- On-board Battery charging circuit (up to 7 Ahr when using a 12 V Sealed Lead Acid Battery).
- In-field Firmware upgrades.
- Four Digital Inputs let you interface with a variety of devices such as reed switches and push-buttons. When used with the IXP220 Software these Digital Inputs can perform specific tasks such as:
  - Door Open Sensing (DOS) with End of Line (EOL) Sensing.
  - Request to Exit (RTE).

## ImproX IXP220

### Controller

ISC960-1-0-GB-XX	ISC962-1-0-GB-XX	IPS960-1-0-GB-XX
IPS961-1-0-GB-XX	IPS962-1-0-GB-XX	IPS963-1-0-GB-XX
GSM900-0-6-GB-XX	GSM901-0-0-GB-XX	

### Power Supply Combo (IPS960 – IPS963)

- A 16 V AC (40 VA) Transformer providing 2 A to power the Controller and charge a 12 V 7 Ahr Sealed Lead Acid Battery.
- Automatic switch-over to Battery operation on Mains Failure.
- Mild Steel Cabinet, accommodating the Transformer, IXP220 Controller and Battery.
- Uses Quick Click Glands.
- 1 Anti-tamper Switch.

### ImproX GSM Module (GSM900) (Optional Extra)

- Provides the IXP220 Controller with TCP/IP connectivity without requiring any additional network cable or router infrastructure.
- Using a GSM network, The ImproX GSM Module allows you to:
  - Contact a remote IXP220 Controller.
  - Program an IXP220 Controller without removing it from the remote location.
  - Download transactions from an IXP220 Controller installed at a remote site.

## Physical Specifications

### ISC96X Open Frame Construction

Length	: 200 mm (8 in).
Width	: 123 mm (5 in).
Height	: 31 mm (1 in).
Approximate Weight	: 580 g (20 oz).

### IPS96X Power Supply Combo

Length	: 305 mm (12 in).
Width	: 295 mm (11 in).
Height	: 77 mm (3 in).
Approximate Weight	: 3 kg (7 lb) excluding Controller or Battery.
Cabinet Material	: Mild Steel.
Colour	: Black.

### ImproX GSM Module (Optional Extra)

Approximate Weight (GSM900)	: 65 g (2.29 oz) including Antenna.
Approximate Weight (GSM901)	: 15.4 g (0.5 oz).

## Environmental Specifications

Operating Temperature	: -25°C to +60°C (-13°F to +140°F).
Storage Temperature	: -40°C to +80°C (-40°F to +176°F).
Humidity Range	: 0 to 95% relative humidity at +40°C (+104°F) non-condensing.

### Approvals

CE Approval (ISC96X and IPS96X)	: EN301 489-1 and EN301 489-3.
CE Health and Safety Certification (ISC96X and IPS96X)	: SANS 60950-1:2003 and IEC 60950-1:2001.



### Approvals (Continued)

CE Approval (GSM900 and GSM901) : Pending.

FCC Approval : Pending.

Dust & Splash Resistance (ISC96X) : Designed to work in an indoor (dry) environment. The Controller is NOT sealed against water.

Dust & Splash Resistance (IPS96X) : Designed to work in an indoor (dry) environment similar to IP20. The Power Supply Combo is, therefore, not sealed against water.

Drop Endurance (ISC96X, IPS96X, GSM900 and GSM901) : 1 m (3.28 ft) drop (in packaging).

## Electrical Specifications

### Power

#### ISC96X Open Frame Construction

##### Power Input

Main Power Input Port : 18 V DC to 32 V DC or 16 V AC to 24 V AC.

Battery Input Port : 12 V DC to 14 V DC.

##### Typical Current Distribution

Controller	Current (mA)	Power (W)
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12 V DC with no peripherals connected and relays off	90	1.08
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24 V DC with no peripherals connected and relays off	60	1.4
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16 V AC with no peripherals connected and relays off	70	1.1
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Battery Charging : 350 mA Trickle charge at 13.7 V DC maximum.

External Readers : 200 mA continuous at 5 V DC and 12 V DC maximum per port.

Power Output Port : 1 A continuous at 12 V DC to 14 V DC maximum.

Power Input Protection : Over-voltage and over-current protection are provided on the Main Power Input.

NOTE: EMC emissions only apply when using the main Power Input Port.

NOTE: As an alternative to a battery, power the IXP220 using a 12 V DC uninterrupted power supply connected using the Battery Input.

NOTE: The Power Output Port provides a nominal 12 to 14 V DC at 1 A continuous current. When using the 12 V Backup Battery, the output provides up to 3 A briefly to cater for inrush currents into locks and other equipment. When using the Controller without the 12 V Backup Battery, then any load that demands more than 3 A from the Power Output Port can cause the IXP220 to protect against overload. The Controller achieves this by indefinitely entering Total Shutdown Mode. Once the overload is removed, the IXP220 resumes normal operation after a maximum of 3 seconds.

#### IPS96X Power Supply Combo

##### Transformer

NOTE: An integrated transformer supplies power to this model IXP220 Controller. The Typical Current Distribution for the Open Frame Construction applies.

Input Voltage : 230 V AC (nominal) at 50 Hz to 60 Hz.

Output Voltage : 16 V AC.

Output Current : 2 A maximum.

The following specifications are common to the Open Frame Construction and the Power Supply Combo options:

##### Battery

Type : 12 V Sealed Lead Acid Battery, 7 Ah (Max).

Length : 151 mm (6 in) (Max).

Width : 65 mm (3 in) (Max).

### Battery (Continued)

Height : 99 mm (4 in) including the Terminals (Max).

Charge Voltage : 13.8 V DC at 350 mA (Max).

#### Real Time Clock Backup Battery (RTC)

Battery Type : 1 x 3 V, CR2032, Lithium cell battery.

Battery Life : 1 year with power OFF, 5 years with Power ON, 5 years Storage with Battery Tab in place.

### Controller Bus

#### USB Port

Connection : USB Device, Type-B, female connector, 12 Mbps, USB V2.0.

#### Ethernet Port

Connection : Standard Ethernet RJ45 connector. 10/100 Base T, half or full duplex.

#### RS232 Port

Connection : 9-Way, D-type, female connector or terminal block connection.

NOTE: To achieve RS232 connection, use either the 9-way, D-type, female connector OR the terminal block connection.

Default Baud Rate : 38 400.

#### RS485 Controller Port

Electrical Interface : RS485.

Default Baud Rate : 38 400.

Data Format : 8 data bits, no parity, 1 stop bit.

Communications Protocol : ImproX Secure Communications Protocol.

Line Termination (RS485) : Provision is made for line termination.

#### GSM Module (GSM900)

Frequency : 850 MHz, 900 MHz, 1 800 MHz and 1 900 MHz.

Minimum Power Consumption : 0.05 W.

Operating Power Consumption : 1.5 W.

Peak Power Consumption : 7.5 W.

### Terminal Bus

Electrical Interface : RS485.

Baud Rate : 38 400.

Data Format : 8 data bits, no parity, 1 stop bit.

Communications Protocol : ImproX Secure Communications Protocol.

Line Termination : Provision is made for line termination.

### Reader Options

Antenna Port : 2 Fully functional Antenna Reader Ports.

#### Wiegand Port

Power Output : 12 V DC or 5 V DC (selectable) at maximum 200 mA.

Modes Supported : Tag, Tag + PIN-code, Personal Access Code or Reason Code Mode except when the Reader Port is set to Wiegand Open Mode.

### Digital Inputs

Input Type : 4 x Dry Contact Digital Inputs.

Detection Resistance Range : < 2 kOhm.

Protection Range : +20 V continuous.

## Relays

Relay Output : 2 x Relays, Form C, each with NO, COM and NC contacts.

Contact Ratings : 10 A at 28 V DC,  
5 A at 220 V AC,  
12 A at 120 V AC.

Operations : 100 000 Minimum.

## Alarm

Alarm Signal : IN: Dry Contact Digital Input.  
GND: Ground reference.  
OUT: Open Collector Digital Output.

### Alarm Relay

Relay Output : 1 x Relay, Form C with NO, COM and NC contacts.

Contact Ratings : 10 A at 28 V DC,  
5 A at 220 V AC,  
12 A at 120 V AC.

## Other

SD Card Adaptor Reserved for future use. : Standard 9-Pin SD Mode Interface, 2 GB max.

Anti-tamper Switch : **1 Switch**, detects opening of the Top Cover on the **Power Supply combo** model. No anti-tamper is supplied on the open frame Controller.

## Factory Defaults

Baud Rate : Factory-set to 38 400.

### Beep Codes

Fails Power-on Self-test : Single long beep of 2 second duration.

Passes Power-on Self-test : Two short beeps of 200 ms duration, separated by a 200 ms inter-beep pause.

## User Interfaces

### Liquid Crystal Display (Reserved for future use)

Characters : 16 Characters by 4 lines.

Character Sets : English, Katakana.

Contrast : Adjustable using the Trimpot.

Back-lighting : Turned on and off via the Communications Protocol.

### Keypad (Reserved for future use)

Buttons : 12 Alphanumeric and function keys.

Back-lighting : Yes.

*NOTE: The LCD and Keypad back-lighting operate independently of each other.*

## Controller

### Status Indicator

Status LED : Power applied to the Controller indicated by steady Red LED (internally visible).

### Diagnostic Indicators

Incoming RS485 Data : Flashing Green LED (internally visible).

Outgoing RS485 Data : Flashing Red LED (internally visible).

Incoming RS232 Data : Flashing Green LED (internally visible).

Outgoing RS232 Data : Flashing Red LED (internally visible).

Speed LED (Ethernet) : Steady Red LED (internally visible).

Link LED (Ethernet) : Steady Red LED (internally visible).

Active LED (Ethernet) : Flashing Red LED (internally visible).

### Diagnostic Indicators (Continued)

Relay LED : Steady Red LED (internally visible).

SD/MMC Active : Steady Red LED (internally visible).

USB 2.0 Active : Steady Red LED (internally visible).

Digital Inputs : Steady Green LED (internally visible).

GSM900 Status LED : Flashing Red LED (internally visible, only on installed GSM Module).

GSM901 Status LED : Flashing Red LED (internally visible, only on installed GSM Module).

GSM901 TXD : Flashing Red LED (internally visible).

GSM901 RXD : Flashing Green LED (internally visible).

### Reader Interfaces

Antenna Reader : 2 Individual standard interfaces.

Wiegand Reader : 2 Standard interfaces, including 12 V DC and 5 V DC Power Outputs, 0 and 1 Data Streams, LED Control, Buzzer Control and Scanner Inhibit.

## Related Information

For extra information relating to this product refer to the:

- IXP220 Controller Hardware Installation Manual (ISC300-0-0-GB-XX).
- IXP220 Software Quick Start Guide (ISW302-0-0-GB-XX).
- IXP220 Software Manual (ISW300-0-0-GB-XX).
- IXP220 Webhelp (ISW390-0-0-GB-XX).

## Ordering Information

Order the ImproX IXP220 Controller using the following Part Numbers:

- ISC960-1-0-GB-XX: ImproX IXP220 Stand-alone Controller.
- ISC962-1-0-GB-XX: ImproX IXP220 System Controller.
- IPS960-1-0-GB-XX: ImproX IPS with an IXP220 Stand-alone Controller 110 V.
- IPS961-1-0-GB-XX: ImproX IPS with an IXP220 Stand-alone Controller 220 V.
- IPS962-1-0-GB-XX: ImproX IPS with an IXP220 System Controller 110 V.
- IPS963-1-0-GB-XX: ImproX IPS with an IXP220 System Controller 220 V.

Order the optional extra ImproX GSM Module or ImproX GSM Modem Adaptor using the following Part Numbers:

- GSM900-0-6-GB-XX: ImproX GSM Module.
- GSM901-0-0-GB-XX: ImproX GSM Modem Adaptor.

## Warranty Details

**CAUTION: We reserve the right to nullify the products warranty where you have not properly installed the Metal-oxide Varistors.**

This product conforms to our Warranty details on [www.impro.net](http://www.impro.net).

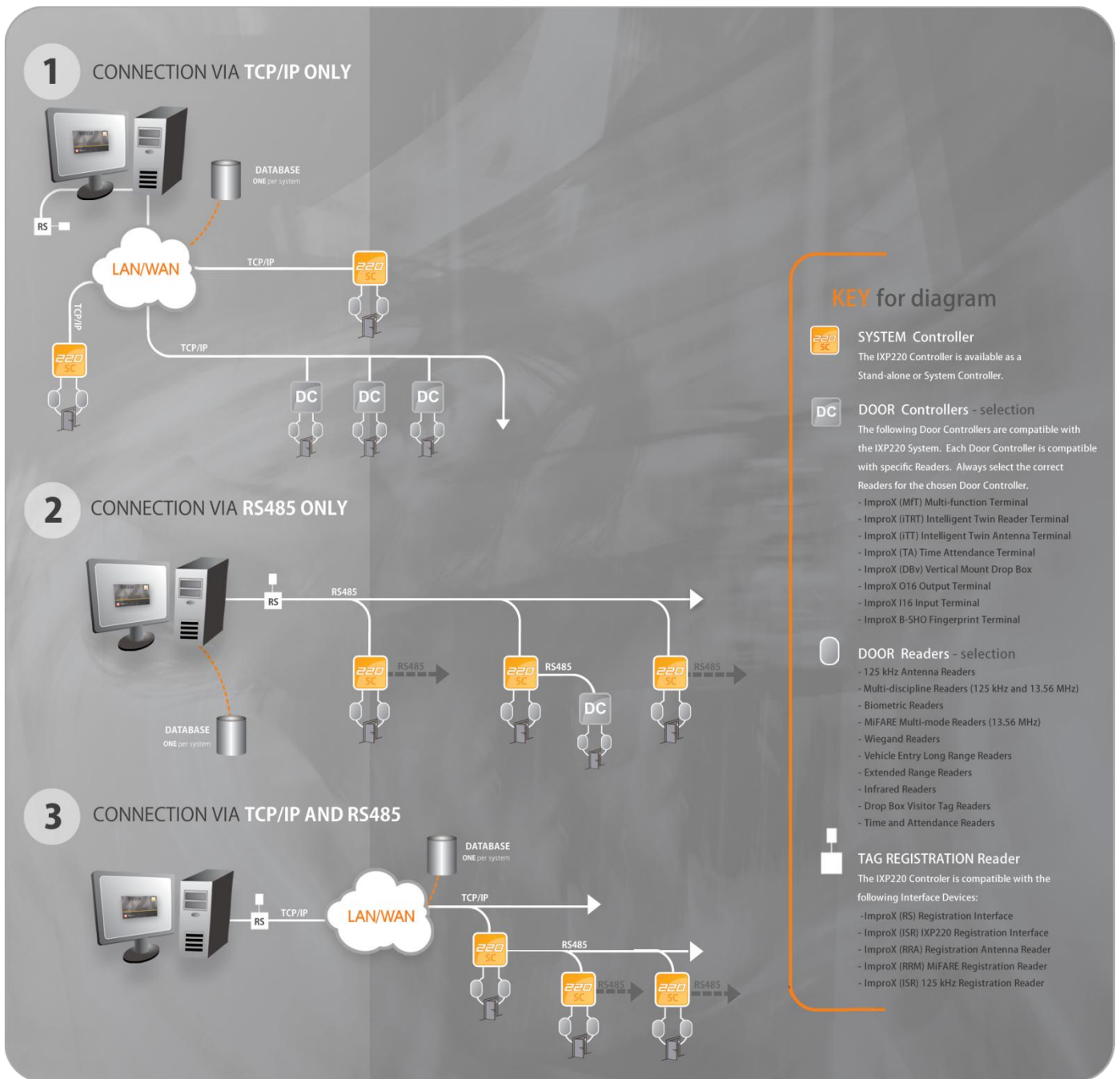


Figure 1: IXP220 System Overview

This Product Specification Catalogue applies to the ImproX IXP220 Controller, ISC960-1-0-GB-00, ISC962-1-0-GB-00, IPS960-1-0-GB-03, IPS961-1-0-GB-03, IPS962-1-0-GB-03 and IPS963-1-0-GB-03 and the ImproX GSM Module, GSM900-0-6-GB-00 and GSM901-0-0-GB-00.  
(The last two digits of the Impro stock code point to the issue status of the document or product).